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Classification of Uveal Melanoma Predicts Prognosis in 7,731 Patients

Classificação do melanoma uveal como fator prognóstico em 7731 pacientes

Clasificación del melanoma uveal como factor pronóstico en pacientes 7731

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The American Joint Committee on Cancer (AJCC) classification is in its seventh edition. In addition to universal tumor staging (TNM), this classification is very relevant in the field of ocular oncology, which involves iris, ciliary body, and choroidal melanoma. It aimed to separate uveal melanoma into anatomical stages to provide information regardingthe prognosis for metastasis and death.

The AJCC's classification of posterior uveal melanoma involves melanoma categorization and staging. Categorization includes measurements of the tumor thickness andtumor base. It defines which of the four previously designated size groups the tumor fits into: T1, T2, T3, or T4 (TABLE 1). The staging process involves the categorization results and information regardinglymph nodes (N) and metastasis (M) to define which of the four anatomical stages the tumor fits into: I, II, III, or IV (TABLE 2).

Table 1. Posterior Uveal Melanoma Category Based on American Joint Cancer Committee (7th Edition) Classification*

Primary tumor (T)	
T1	Tumor base <3–9 mm with thickness ≤6 mm
	Tumor base 9.1–12 mm with thickness ≤3 mm
T1a	T1 tumor without ciliary body involvement and extraocular extension
T1b	T1 tumor with ciliary body involvement
T1c	T1 tumor without ciliary body involvement but with extraocular extension ≤5 mm in diameter
T1d	T1 tumor with ciliary body involvement and extraocular extension ≤5 mm in diameter
T2	Tumor base <9 mm with thickness 6–9 mm
	Tumor base 9.1–12 mm with thickness 3.1–9 mm
	Tumor base 12.1–15 mm with thickness ≤6 mm
	Tumor base 15.1–18 mm with thickness ≤3 mm
T2a	T2 tumor without ciliary body involvement and extraocular extension
T2b	T2 tumor with ciliary body involvement
T2c	T2 tumor without ciliary body involvement but with extraocular extension ≤5 mm in diameter
T2d	T2 tumor with ciliary body involvement and extraocular extension ≤5 mm in diameter
T3	Tumor base 3.1–9 mm with thickness 9.1–12 mm
	Tumor base 9.1–12 mm with thickness 9.1–15 mm
	Tumor base 12.1–15 mm with thickness 6.1–15 mm
	Tumor base 15.1–18 mm with thickness 3.1–12 mm
T3a	T3 tumor without ciliary body involvement and extraocular extension
T3b	T3 tumor with ciliary body involvement
T3c	T3 tumor without ciliary body involvement but with extraocular extension ≤5 mm in diameter
T3d	T3 tumor with ciliary body involvement and extraocular extension ≤5 mm in diameter
T4	Tumor base 12.1–15 mm with thickness >15 mm
	Tumor base 15.1–18 mm with thickness >12 mm
	Tumor base >18 mm with any thickness
T4a	T4 tumor without ciliary body involvement and extraocular extension
T4b	T4 tumor with ciliary body involvement
T4c	T4 tumor without ciliary body involvement but with extraocular extension ≤5 mm in diameter
T4d	T4 tumor with ciliary body involvement and extraocular extension ≤5 mm in diameter
T4e	Any tumor size with extraocular extension >5 mm in diameter

*Source: Edge SB, Byrd DR, Compton CC, et al, eds. Malignant melanoma of the uvea. In: AJCC Cancer Staging Manual. 7th ed. New York, NY: Springer; 2010:547–59.

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Table 2. American Joint Cancer Committee (7th Edition) Classification of Posterior Uveal Melanoma by Stage*

Tumor Staging	Primary Tumor (T)	Regional Lymph Node (N)	Distant Metastasis (M)
Stage I	T1a	N0	M0
Stage II	T1b-d, T2a-b, T3a	N0	M0
Stage IIA	T1b-d, T2a	N0	M0
Stage IIB	T2b, T3a	N0	M0
Stage III	T2c-d, T3b-d, T4a-c	N0	M0
Stage IIIA	T2c-d, T3b-c, T4a	N0	M0
Stage IIIB	T3d, T4b-c	N0	M0
Stage IIIC	T4d-e	N0	M0
Stage IV	Any T	N1	M0
	Any T	Any N	M1

*Adapted from Malignant melanoma of the uvea. In: Edge DB, Byrd DR, Compton CC, et al., eds. AJCC Cancer Staging Manual. 7th ed. New York, NY: Springer, 2010; 547—59.

The present article[1] sought to explore the predictive value of the AJCC's anatomical stage classification system for metastasis and death by posterior uveal melanoma.

Based on data from the Ocular Oncology Service at the Wills Eye Hospital, 7731 patients with a diagnosis of ciliary body or choroidal melanoma between 1970and 2008 were considered. There wasadequate tumor information regardingall patients, which enabled retrospective classification of uveal melanoma using AJCC categorization (7th edition). Basal diameter was estimated using binocular indirect ophthalmoscopy and ultrasonography, and tumor thickness was measured using ultrasonography. Varioustreatment options were used with these patients, including laser photocoagulation, transpupillary thermotherapy, plaque radiotherapy, local resection, enucleation, and exenteration. Furthermore, systemic monitoring and screening for metastasis were performed.

Out of the 7731 patients, 2767 (36%), 3735 (48%), 1220 (16%), and 9 (<1%) were classified as having stage I, II, III, and IV tumors, respectively.

Following data analysis, it was estimated that, of the patients with 10 and 20 years of follow-up, the respective probability of metastasis was 12% and 20% for stage I patients, 29% and 44% for stage II patients, 61% and 73% for stage III patients ($p<0.001$), and 100% among stage IV patients after 1 year of follow-up.

Meanwhile, the respective estimates of melanoma-related death at 10 and 20 years after diagnosis were 6% and 8% for stage I patients, 15% and 24% for stage II patients, 39% and 53% for stage III patients, and 100% among stage IV patients after 1year of follow-up ($p<0.001$).

The predictive factors for metastatic disease and death in cases of stage I melanoma include a large tumor base and an increase in tumor thickness. Aging, increase in tumor thickness, a large tumor base, tumor pigmentation, a mushroom configuration, and associated subretinal fluid were predictive factors among stage II patients. Stage III factors included not only the abovementioned factors but also an inferior tumor location.

A recent publication by the AJCC Ophthalmic Oncology Task Force mentioned a study using a cohort of 3809 patients from 10 international ocular oncology centers. The estimates ofmetastasis-free survival 10 years after diagnosis were found to be 94% (stage I), 78% (stage II), and 56% (stage III).

Thus, the analysis of 7731 patients with posterior uveal melanoma revealed the AJCC's clinical classification to be predictive of metastatic disease. Briefly, this classification may be used to select patients at high risk for metastasis for treatment protocols that focus on the prevention of metastatic events. Furthermore, itshows the importance of early detection and disease management.

REFERENCES

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